

Li Metal Protection for High Energy Space Batteries, Phase I

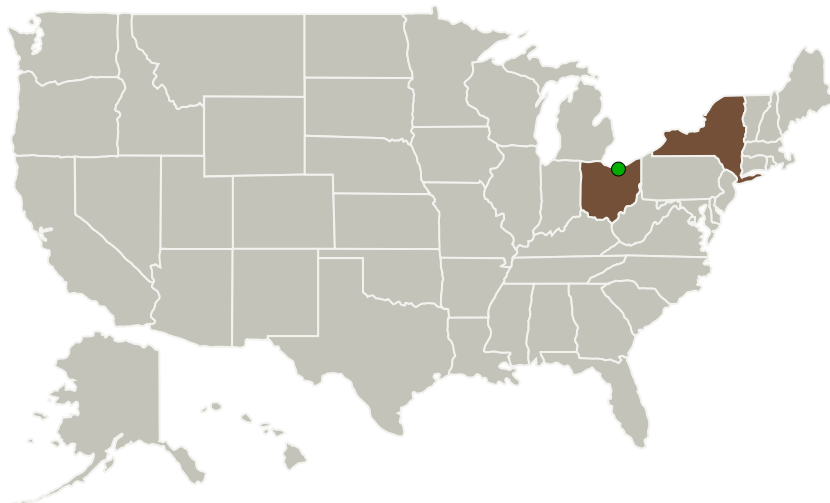
Completed Technology Project (2014 - 2014)




Project Introduction

NOHMs Technologies proposes to develop a novel ionic liquid electrolyte formulation developed for the Lithium-Sulfur chemistry that can protect the lithium metal and has demonstrated superior performance and safety characteristics with the potential to offer 600 Wh/kg on the cell level. For this NASA Phase I project, NOHMs Technologies will optimize our proprietary ionic liquid electrolyte and demonstrate how the electrolyte provides safe, non-flammable high-energy performance and provides Li-metal protection. NOHMs will provide full cell data and analysis to demonstrate the feasibility of our system to meet NASA's 'Far Term Mission' specific energy and energy density goals. The battery technology under development by NOHMs is capable of delivering batteries with specific energies that are three times higher than today's state of the art Li-ion battery systems. For NASA missions, this can be translated into increased operational range, functionality, or payload capabilities and significantly reduced operational cost. NASA applications.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Nohms Technologies	Lead Organization	Industry	Rochester, New York
 Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

	Specific Energy (Wh/kg)	Energy Density (Wh/l)	Cycle Life
Lander	210	130-500	10
Rover	200	180	2000
EVA	270	250	100
Near Term Missions	265	675	250
Far Term Missions	500	700	250
NOHMs Li-S (now)	350	400	500
Phase I Objective	600	675	500

Li metal protection for High Energy Space Batteries Project Image

Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Images	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destinations	3

Li Metal Protection for High Energy Space Batteries, Phase I

Completed Technology Project (2014 - 2014)



Primary U.S. Work Locations

New York

Ohio

Project Transitions

**June 2014:** Project Start**December 2014:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/140615>)

Images

	Specific Energy (Wh/kg)	Energy Density (Wh/l)	Cycle Life
Lander	210	130-500	10
Rover	200	180	2000
EVA	270	250	100
Near Term Missions	265	675	250
Far Term Missions	500	700	250
NOHMs Li-S (now)	350	400	500
Phase I Objective	600	675	500

Project Image

Li metal protection for High Energy Space Batteries Project Image
(<https://techport.nasa.gov/image/125845>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Nohms Technologies

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

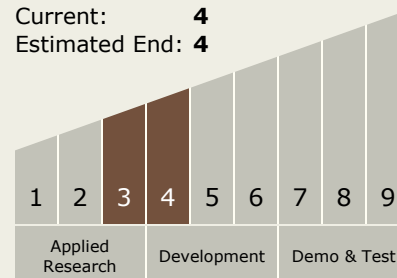
Program Manager:

Carlos Torrez

Principal Investigator:

Surya Moganty

Technology Maturity (TRL)

Start: **3**Current: **4**Estimated End: **4**

Li Metal Protection for High Energy Space Batteries, Phase I

Completed Technology Project (2014 - 2014)



Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
 - └ TX03.2 Energy Storage
 - └ TX03.2.1 Electrochemical: Batteries

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System